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EXAMINER	
SMITH, TERRI L	
ART UNIT	**PAPER NUMBER**
3762	

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,421	BRODNICK, DONALD E.	
	Examiner	Art Unit	
	Terri L. Smith	3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1–6, 15–20, 29, 30–32, 34–35, 44–50, 59, 61–64, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz, U.S. Patent 5,511,533 and in view of Ricketts et al., U. S. Patent 4,026,278.

Regarding Claims 1 and 45, Segalowitz discloses a plurality of electrodes (Fig. 8) for attachment to a patient's upper torso (Figs. 8 and 17), wherein a plurality of electrodes does not include electrodes for attachment to a patient's limbs; an acquisition module/device (Fig. 8, element 184; Fig. 17, element 381) coupled to a plurality of electrodes for acquiring electrical signals from a plurality of electrodes; and a signal processor (Fig. 8, element 186; Fig. 17, element 382; Fig. 21, element 401) coupled to an acquisition module for generating a plurality of electrocardiogram precordial leads from the acquired signals (Fig. 8, precordial leads V_1–V_6).

Segalowitz does not disclose at least one of a plurality of electrodes is attachable to a patient's back, and is configured to collect a reference signal from a patient. However, Ricketts discloses at least one of a plurality of electrodes is attachable to a patient's back, since the electrodes can be placed anywhere on the belt as it encircles the patient; therefore Ricketts is capable of meeting the functional use recitations of having an electrode "attachable to the patient's back" (column 2, lines 45–46 and 48–50) and is "configured" to collect a reference

signal from a patient (column 1, lines 28–30; column 3, line 18; column 4, lines 14–16) to ascertain electrical phenomena arising from the electrocardiographic data associated with the functioning of the heart (column 1, lines 10–13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Segalowitz to include at least one of a plurality of electrodes being capable of being attachable to a patient's back, and is "configured" to collect a reference signal from a patient, as taught by Ricketts to ascertain electrical phenomena arising from the electrocardiographic data associated with the functioning of the heart (column 1, lines 10–13).

Regarding Claims 2, 17, 31, 46, 61 and 16 (the portion covering the first two limitations of the device), and 30 (the portion covering the first two limitations of the device), Segalowitz does not disclose a belt adapted to be attached around the circumference of a patient's upper torso, and wherein a plurality of electrodes are coupled to a belt so that when a belt is attached to a patient each one of a plurality of electrodes is generally positioned in a plane perpendicular to a longitudinal axis approximately defined by a patient's spine; a plurality of electrodes coupled to a belt, a plurality of electrodes including at least one electrode positioned within a belt so that when a belt is attached to a patient the electrode contacts a patient's chest, and at least one electrode positioned within a belt so that when a belt is attached to a patient the electrode contacts a patient's back, wherein a plurality of electrodes does not include electrodes for attachment to a patient's limbs (column 2, lines 45–46 and 53–56). However, Ricketts does disclose a belt adapted to be attached around the circumference of a patient's upper torso (Fig. 1), and wherein a plurality of electrodes are coupled to a belt (column 2, lines 45–46 and 53–56) so

that when a belt is attached to a patient each one of a plurality of electrodes is generally positioned in a plane perpendicular to a longitudinal axis approximately defined by a patient's spine (Fig. 1). Ricketts also discloses a plurality of electrodes coupled to a belt, a plurality of electrodes including at least one electrode positioned within a belt so that when a belt is attached to a patient the electrode contacts a patient's chest, and at least one electrode positioned within a belt so that when a belt is attached to a patient the electrode is capable of contacting a patient's back, wherein a plurality of electrodes does not include electrodes for attachment to a patient's limbs (column 2, lines 45–46 and 53–56) to provide an improved means for rapidly and securely applying electrodes to a body member (column 1, lines 39–41).

Regarding Claims 3, 18, 32, 47, and 62, Segalowitz does not disclose a belt is adapted to be attached around the circumference of a patient's upper torso at a level slightly below a patient's breast. However, Ricketts discloses a belt is adapted to be attached around the circumference of a patient's upper torso at a level slightly below a patient's breast (Fig. 1) for retaining the belt on the body member (column 1, line 54) for providing electrocardiographic signals (column 4, line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Segalowitz to include a belt adaptable to be attached around the circumference of a patient's upper torso and at a level slightly below a patient's breast, such that a plurality of electrodes are coupled to a belt so that when a belt is attached to a patient each one of a plurality of electrodes is generally positioned in a plane perpendicular to a longitudinal axis approximately defined by a patient's spine, as taught by Ricketts, to provide an improved means for rapidly and securely applying electrodes to a body member (column 1, lines

39–41) and for retaining the belt on the body member (column 1, line 54) for providing electrocardiographic signals (column 4, line 18).

Regarding Claims 4, 48, 63, 16 (the portion covering the last four limitations of the device, which excludes the amended limitation of the claim), and 30 (the portion covering the last two limitations of the device), Segalowitz discloses a transmitter (Fig. 17, element 383) coupled to an acquisition module (Fig. 17, element 381) and a plurality of electrodes for acquiring electrical signals from a plurality of electrodes (Fig. 8, element 184); and a receiver (Fig. 17, element 388) coupled to an electrocardiogram machine (Fig. 17, elements 397 and 398), wherein a transmitter (Fig. 17, element 383), an acquisition module (Fig. 17, element 381), and a signal processor for generating a plurality of electrocardiogram precordial leads from the acquired electrical signals (Fig. 17, element 382) are coupled to a belt (Fig. 17, element 321), wherein a receiver (Fig. 17, element 388) is coupled to an electrocardiogram machine (Fig. 17, element 397, 398), and wherein a plurality of electrocardiogram precordial leads are wirelessly transmitted from a transmitter to a receiver to a remote location (Fig. 17).

Regarding Claims 5, 19, 34, and 49, Segalowitz discloses a signal processor generates a plurality of electrocardiogram precordial leads from the acquired electrical signals (column 27, lines 49–56, 64–66; column 28, line 1; column 35, lines 34–52) by generating an approximation of an electrical potential near the center of a patient's heart based on the acquired electrical signals (Fig. 17, element 321 with details of element 321 shown in Fig. 18; column 30, lines 57–58 and 60–62; column 31, lines 4–9).

Regarding Claims 6, 20, 35, 50, and 64, Segalowitz discloses an approximation of an electrical potential near the center of a patient's heart is an approximation of Wilson's central

terminal (column 30, lines 57–62). In view of a teaching on Wilson's terminal, Segalowitz teaches that the central terminal is the zero or reference point generally referred to as the central terminal (column 17, lines 63–67; column 18, lines 1–2).

Regarding Claims 15, 29, 44, 59, and 72, Segalowitz discloses an electrocardiogram machine (Figs. 17 and 21, element 397) wirelessly coupled to an acquisition module (Figs. 17 and 21, elements 396) and a telemetry monitor (Figs. 17 and 21, element 398) coupled to an electrocardiogram machine (column 35, lines 53 – 59).

3. Claims 7, 14, 21, 28, 36, 43, 51, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz and Ricketts as applied to claims 1, 5, 16, 19, 30, 34, 45, and 49 above, and further in view of Shusterman et al., U.S. Patent 6,389,308.

Regarding Claims 7, 21, 36, and 51, neither Segalowitz nor Ricketts discloses a signal processor generates an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of a plurality of the acquired electrical signals. However, Shusterman discloses a signal processor generates an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of a plurality of the acquired electrical signals (column 7, lines 48–50) to achieve the optimal sensitivity in the detection of hidden or small ECG changes (column 7, lines 40–41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz and Ricketts to include a signal processor to generate an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of a plurality of the acquired electrical signals, as

taught by Shusterman, to achieve the optimal sensitivity in the detection of hidden or small ECG changes (column 7, lines 40–41).

Regarding Claims 14, 28, 43, and 58, neither Segalowitz nor Ricketts discloses an acquisition module is capable of storing precordial leads for approximately one month. However, Shusterman discloses an acquisition module (Fig. 1) is capable of storing precordial leads for approximately one month (Fig. 13; column 5, lines 66–67) for focusing on a patient's critical primary elements (column 5, lines 16–17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz and Ricketts to include an acquisition module capable of storing precordial leads for approximately one month, as taught by Shusterman, for focusing on a patient's critical primary elements (column 5, lines 16–17).

4. Claims 8, 11–12, 22, 25–26, 37, 40–41, 52, and 55–56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz and Ricketts as applied to claims 1, 16, 30, and 45 above, and further in view of GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement*.

Regarding Claims 8, 22, 37, and 52 neither Segalowitz nor Ricketts discloses a plurality of electrodes includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, a third electrode attachable to a patient's back in approximately the fifth intercostal space under the left mid-scapular line, and a fourth electrode attachable to a patient's back in approximately the fifth

intercostal space under the right mid-scapular line. However, the article by GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement*, teaches that a plurality of electrodes includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, a third electrode attachable to a patient's back in approximately the fifth intercostal space under the left mid-scapular line, and a fourth electrode attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line (Figures on first and second pages) to provide guidelines for ECG placement to correctly determine ECG lead placement (first page).

Regarding Claims 11, 25, 40, and 55 neither Segalowitz nor Ricketts discloses a plurality of electrodes includes a first electrode capable of being attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line and at least one electrode attachable to a patient's chest. However, the article by GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement* discloses a plurality of electrodes includes a first electrode capable of being attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line (first page) and at least one electrode attachable to a patient's chest (second page) to provide guidelines for ECG placement to correctly determine ECG lead placement (first page).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz and Ricketts to include a plurality of electrodes that includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode

attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, as taught by GE Medical Systems Information Technologies, to provide guidelines for ECG lead placement to correctly determine ECG lead placement (first page).

Regarding Claims 12, 26, 41, and 56 Segalowitz discloses a signal processor uses a signal acquired from a first electrode (Fig. 18, element 363 on strip 321) as an approximation of an electrical potential near the center of the patient's heart (Fig. 17, element 321; column 31, lines 8–9).

5. Claims 9, 23, 38, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz, Ricketts, and GE Medical Systems Information Technologies as applied to claims 8, 22, 37, and 52 above, and further in view of, Shusterman, U.S. Patent 6,389,308.

Neither Segalowitz nor Ricketts nor GE Medical Systems Information Technologies discloses a signal processor generates an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of the signals acquired from a plurality of electrodes. However, Shusterman discloses a signal processor generates an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of the signals acquired from a plurality of electrodes (column 7, lines 48–50) to achieve the optimal sensitivity in the detection of hidden or small ECG changes (column 7, lines 40–41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz, Ricketts, and GE Medical Systems Information Technologies to include a signal processor to generate an approximation of

an electrical potential near the center of a patient's heart by determining a weighted combination of the signals acquired from a plurality of electrodes, as taught by Shusterman, to achieve the optimal sensitivity in the detection of hidden or small ECG changes (column 7, lines 40–41).

6. Claims 10, 24, 39, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz, Ricketts, GE Medical Systems Information Technologies, and Shusterman as applied to claims 9, 23, 38, and 53 above, and further in view of Pritchard, U.S. Patent 5,615,687.

Neither Segalowitz nor Ricketts nor GE Medical Systems Information Technologies nor Shusterman discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from a first electrode and a second electrode. However, Pritchard discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from a first electrode and a second electrode (column 1, lines 59–62) to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz, Ricketts, GE Medical Systems Information Technologies, and Shusterman to include a signal processor to generate each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical

potential near the center of a patient's heart from each one of the signals acquired from a first electrode and a second electrode, as taught by Pritchard, to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

7. Claims 13, 27, 42, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segalowitz, Ricketts, and GE Medical Systems Information Technologies as applied to claims 12, 26, 41, and 56 above, and further in view of, Pritchard, U.S. Patent 5,615,687.

Neither Segalowitz nor Ricketts nor GE Medical Systems Information Technologies discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest. However, Pritchard discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest (column 1, lines 59–62) to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Segalowitz, Ricketts, and GE Medical Systems Information Technologies to include a signal processor to generate each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical

potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest, as taught by Pritchard, to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

8. Claims 60 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ricketts et al., U. S. Patent 4,026,278, and in view of Segalowitz, U.S. Patent 5,511,553 and Shusterman, U.S. Patent 6,389,308.

Regarding Claim 60, Ricketts discloses positioning a plurality of electrodes on a patient's upper torso, a plurality of electrodes including at least one electrode positionable on a patient's chest and at least one electrode positionable on a patient's back (Fig. 1; column 2, lines 45–46 and 53–56), a plurality of electrodes does not include electrodes for positioning on a patient's limbs and at least one of a plurality of electrodes is attachable to a patient's back, and is "configured" to collect a reference signal from a patient (column 2, lines 45–46 and 48–50; column 1, lines 28–30; column 3, line 18; column 4, lines 14–16). However, Ricketts does not disclose acquiring electrical signals from a plurality of electrodes with an acquisition module nor generating an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of a plurality of the acquired electrical signals and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest.

Nonetheless, Segalowitz discloses acquiring electrical signals from a plurality of

electrodes (column 27, lines 49–56, 64–66; column 28, line 1; column 35, lines 34–52) with an acquisition module to transmit a single encoded radio frequency signal which carries the twelve-lead electrocardiographic multiple heart signals (column 27, lines 65–67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Ricketts to include acquiring electrical signals from a plurality of electrodes with an acquisition module, as taught by Segalowitz, to transmit a single encoded radio frequency signal which carries the twelve-lead electrocardiographic multiple heart signals (column 27, lines 65–67).

Shusterman discloses generating an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of a plurality of the acquired electrical signals; and generating a plurality of electrocardiogram precordial leads from the acquired electrical signals by subtracting an approximation of the electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest (column 7, lines 48–50) to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Ricketts to generate a plurality of electrocardiogram precordial leads from the acquired electrical signals by subtracting an approximation of the electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest, as taught by Shusterman, to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a

physician (column 1, lines 44–46).

Regarding Claim 71, Shusterman discloses the act of acquiring electrical signals from a plurality of electrodes (Fig. 1) includes the act of acquiring electrical signals for approximately one month (Fig. 13; column 5, lines 66–67).

9. Claims 65–66 and 68–69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ricketts, Segalowitz, and Shusterman as applied to claim 60 above, and further in view of GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement.*

Regarding Claim 65, neither Ricketts nor Segalowitz nor Shusterman discloses a plurality of electrodes includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, a third electrode attachable to a patient's back in approximately the fifth intercostal space under the left mid-scapular line, and a fourth electrode attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line. However, the article by GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement*, teaches that a plurality of electrodes includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, a third electrode attachable to a patient's back in approximately the fifth intercostal space under the left mid-scapular line, and a fourth electrode attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line (Figures on first and second pages) to provide

guidelines for ECG placement to correctly determine ECG lead placement (first page).

Regarding Claim 68, neither Ricketts nor Segalowitz nor Shusterman discloses a plurality of electrodes includes a first electrode capable of being attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line and at least one electrode attachable to a patient's chest. However, the article by GE Medical Systems Information Technologies, *ACI-TIPT Standard 12/15 – Lead Placement* discloses a plurality of electrodes includes a first electrode capable of being attachable to a patient's back in approximately the fifth intercostal space under the right mid-scapular line (first page) and at least one electrode attachable to a patient's chest (second page) to provide guidelines for ECG placement to correctly determine ECG lead placement (first page).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Ricketts, Segalowitz and Shusterman to include a plurality of electrodes that includes a first electrode attachable to a patient's chest in approximately the fourth intercostal space at the right border of the sternum, a second electrode attachable to a patient's chest in approximately the fifth intercostal space at the anterior axillary line, as taught by GE Medical Systems Information Technologies, to provide guidelines for ECG lead placement to correctly determine ECG lead placement (first page).

Regarding Claim 66, Shusterman discloses a signal processor generates an approximation of an electrical potential near the center of a patient's heart by determining a weighted combination of the signals acquired from a plurality of electrodes (column 7, lines 48–50).

Regarding Claim 69, Segalowitz discloses a signal processor uses a signal acquired from a first electrode (Fig. 18, element 363 on strip 321) as an approximation of an electrical potential near the center of the patient's heart (Fig. 17, element 321; column 31, lines 8–9).

10. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ricketts, Segalowitz, Shusterman, and GE Medical Systems Information Technologies as applied to claim 66 above, and further in view of Pritchard, U.S. Patent 5,615,687.

Neither Ricketts nor Segalowitz nor Shusterman nor GE Medical Systems Information Technologies discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from a first electrode and a second electrode. However, Pritchard discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from a first electrode and a second electrode (column 1, lines 59–62) to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Ricketts, Segalowitz, Shusterman, and GE Medical Systems Information Technologies to include a signal processor to generate each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from a first

electrode and a second electrode, as taught by Pritchard, to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

11. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ricketts, Segalowitz, and Shusterman, as applied to claim 69 above, and further in view of Pritchard, U.S. Patent 5,615,687.

Neither Ricketts nor Segalowitz nor Shusterman discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest. However, Pritchard discloses a signal processor generates each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest (column 1, lines 59–62) to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the modified devices of Ricketts, Segalowitz, and Shusterman to include a signal processor to generate each one of a plurality of electrocardiogram precordial leads by subtracting an approximation of an electrical potential near the center of a patient's heart from each one of the signals acquired from the at least one electrode on a patient's chest, as

taught by Pritchard, to convert the raw electrical signals into meaningful information that can be displayed or printed out for review by a physician (column 1, lines 44–46).

Response to Arguments

12. Applicant's arguments filed on 16 November 2005 have been fully considered but they are not persuasive. Examiner respectfully disagrees with Applicant's arguments to rejections under 35 U.S.C. § 103.

In the third paragraph, third sentence under Applicant's REJECTIONS UNDER 35 U.S.C. § 103, Applicant argues that the Ricketts reference does not teach the electrode being configured to collect a reference signal from the patient, thus constructing a precordial central terminal so that precordial ECG leads can be computed without limit electrodes. As stated in paragraph 2, subparagraph 2 above and in the Office Action mailed on 19 October 2005 (paragraph 5, subparagraph 2) Ricketts teaches electrodes collecting signals from the patient. Since these electrodes collect signals form the patient, they are capable of (inherently) or are configured to collect a reference signal. It is noted that the claims do not state that the signal processor uses the reference signal – only that an electrode is "configured" to collect a reference signal. Andy electrode that collects ECG signals inherently can collect patient reference signals.

Applicant's argument regarding "constructing a precordial central terminal so that precordial ECG leads can be computed without limit electrodes" is rejected above in the first subparagraph of paragraph 2 under the Segalowitz disclosure (this same reference appears in the Office Action mailed on 19 October 2005 in the first subparagraph of paragraph 5 under the Segalowitz disclosure). The Ricketts reference was not relied upon for teaching "constructing a precordial central terminal so that precordial ECG leads can be computed without limit

electrodes" nor does the Applicant mention this limitation in the final sentence of the third paragraph of the argument (It is unclear why this limitation was linked to the argument against Ricketts). Therefore, Examiner respectfully submits that Ricketts is capable of performing that which is claimed in the present invention; specifically, an electrode positioned on the patient's back, and configured to collect a reference signal from the patient. (Examiner also maintains the argument presented for this limitation in the Office Action filed on 19 October 2005 in paragraph 2, subparagraph 1). It is noted that the argument that Segalowitz and/or Ricketts does not teach that the reference electrode is used to construct "a precordial central terminal ... without limit electrodes" is not claimed.

Examiner respectfully disagrees that "... Segalowitz and Ricketts do not teach a device ... Ricketts does not teach an electrode with such capability" (paragraph 4, lines 4–11) as set forth by the Applicant. In combination Segalowitz and Ricketts teach the limitation as claimed in the present invention as described in paragraph 2, subparagraphs 1–3 above and in the Office Action mailed on 19 October 2005 paragraph 5, subparagraphs 1–3. Therefore, the combined teachings of Segalowitz and Ricketts (not just Ricketts as argued by the Applicant) as presented by these Office Actions, are capable of performing that which is claimed in the present invention; specifically, wherein at least one of the plurality of electrodes is attachable to the patient's back, and is configured to collect a reference signal from the patient.

The remainder of the Applicant's arguments pertaining to each claim center around the combination of Segalowitz and Ricketts and their combination with other applicable art not teaching "a device for acquiring and processing signals including a plurality of electrodes for attachment to the patient's torso, wherein at least one of the plurality of electrodes is attachable

to the patient's back, and is configured to collect a reference signal from the patient." Additionally, the remainder of the Applicant's arguments pertaining to each claim either indicates that the dependent claims are allowable over the teachings of Segalowitz as discussed in each independent claim that relied on Segalowitz which makes the dependent claims allowable as being dependent upon an allowable base claim or that the dependent claims are allowable over the teachings of the combination of Segalowitz and Ricketts and their combination with other art for the same reasons. As a result, Examiner submits that the above arguments apply to each of the Applicant's arguments, and the Examiner contends that the Examiner's arguments show that the combination of all art as presented in the Office Action teaches, that which is claimed in the present invention. Consequently, Examiner has maintained the rejections submitted in the Office Action mailed on 19 October 2005.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this Final Action is set to expire THREE MONTHS from the mailing date of this Action. In the event a first reply is filed within TWO MONTHS of the mailing date of this Final Action and the Advisory Action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the Advisory Action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the Advisory Action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this Final Action.

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Terri L. Smith whose telephone number is 571-272-7146. The Examiner can normally be reached on Monday - Friday, between 7:30 a.m. - 4:00 p.m..

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Angela Sykes can be reached on 571-272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TLS
December 27, 2005
27 December

GEORGE R. EVANISKO
PRIMARY EXAMINER
12/22/5